

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of the Claims:**

1. (Currently amended) A process for separating a sperm type from a sperm population in a sperm sample by electrophoresis comprising subjecting the sperm population to an electric potential such that a sperm type is separated from a sperm population through an ion-permeable barrier.

2. (Original) The process according to claim 1 wherein the sperm type has a desired characteristic selected from the group consisting of motility, robustness, gender, genetic make-up, morphological normality, fertilizing potential, and combination thereof.

3. (Original) The process according to claim 2 wherein the sperm type has fertilizing potential.

4. (Original) The process according to claim 1 wherein the sperm type has an undesired characteristic selected from the group consisting of poor motility, poor morphology, high levels of DNA damage and high levels of reactive oxygen species generation.

5. (Currently amended) The process according to ~~any one of~~ claims 1 to 4 comprising: providing a sample containing sperm to a sample chamber of electrophoresis apparatus comprising a first electrolyte chamber; a second electrolyte chamber; a first sample chamber disposed between the first electrolyte chamber and the second electrolyte chamber; a second sample chamber disposed adjacent to the first sample chamber; a first ion-permeable barrier disposed between the first sample chamber and the second sample chamber; a second ion-permeable barrier disposed between the first electrolyte chamber and the first sample chamber; a third ion-permeable barrier disposed between the second sample chamber and the second electrolyte chamber; and electrodes disposed in the first and second electrolyte chambers; and

applying an electric potential between the electrodes causing at least one sperm type in the first or second sample chamber to move through the first ion-permeable barrier into the other of the first or second sample chamber.

6. (Currently amended) The process according to ~~any one of claims 1 to 5~~ wherein the sperm sample contains at least two populations of sperm.

7. (Currently amended) The process according to ~~any one of claims 1 to 6~~ wherein the electric potential is applied until at least one sperm type reaches a desired purity.

8. (Currently amended) The process according to ~~any one of claims 1 to 7~~ wherein one or more of the first, second, or third ion-permeable barriers are electrophoresis membranes having a characteristic average pore size and pore size distribution.

9. (Currently amended) The process according to claim 8 wherein all of the ion-permeable barriers are electrophoresis membranes having a characteristic average pore size and pore size distribution.

10. (Currently amended) The process according to ~~any one of claims 5 to 9~~ wherein the first ion-permeable barrier is a large pore sized membrane.

11. (Original) The process according to claim 10 wherein the first ion-permeable barrier is a polycarbonate membrane having a pore size of about 1 to about 10  $\mu\text{m}$ .

12. (Currently amended) The process according to ~~any one of claims 1 to 11~~ wherein electrophoresis is carried out with a voltage range from 1 to 200 V.

13. (Currently amended) The process according to ~~any one of claims 1 to 11~~ wherein electrophoresis is carried out with an applied current of up to about 75 mA.

14. (Currently amended) The process according to ~~any one of claims 1 to 11~~ wherein electrophoresis is carried out with a field strength of 1 to 100 V/cm.

15. (Original) The process according to claim 14 wherein the field strength is from 16 to 20 V/cm.

16. (Currently amended) The process according to ~~any one of claims 1 to 15~~ wherein electrophoresis is carried out from several seconds to about 15 minutes in an apparatus having a sample volume of about 100  $\mu$ l to about 4 ml.

17. (Currently amended) The process according to ~~any one of claims 1 to 16~~ wherein sperm is diluted in buffer having a concentration of between 1 to 100 mM.

18. (Currently amended) The process according to any one of claims 1 to 17 wherein the sperm sample has a sperm concentrations of between about 0.1 and  $250 \times 10^6/\text{ml}$  ~~are processed~~.

19. (Currently amended) The process according to claim 18 wherein the sperm concentrations ~~of is~~ between  $15 \times 10^6/\text{ml}$  and  $140 \times 10^6/\text{ml}$  are processed.

20. (Currently amended) The process according to ~~any one of claims 1 to 19~~ wherein at least about 50% of the sperm type remains viable or substantially unchanged after separation.

21. (Currently amended) The process according to claim ~~21~~20 wherein at least about 60% of the sperm type remains viable or substantially unchanged after separation.

22. (Currently amended) The process according to claim ~~22~~21 wherein at least about 70% of the sperm type remains viable or substantially unchanged after separation.

23. (Currently amended) The process according to claim ~~23~~22 wherein at least about 80% of the sperm type remains viable or substantially unchanged after separation.

24. (Original) The process according to claim 23 wherein at least about 90% of the sperm type remains viable or substantially unchanged after separation.

25-26. (Canceled).

27. (New) A method of fertilizing and ovum comprising contacting the ovum with a sperm type separated by the process of claim 1.